

INTERNATIONAL SEARCH REPORT

PCT/IB2004/004426

A. CLASSIFICATION OF SUBJECT MATTER
 IPC 7 C12P13/08 C12N9/04 C12N15/53 C12N1/21
 //((C12N9/04,C12R1:15))

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
 IPC 7 C12P C12N

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
 EPO-Internal, BIOSIS, WPI Data, PAJ, EMBASE, FSTA, EMBL

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 01/07626 A (O'DONOHUE, MICHAEL, R; HANKE, PAUL, D; ARCHER-DANIELS-MIDLAND COMPANY) 1 February 2001 (2001-02-01) the whole document -----	1-3, 9-23, 28-41, 44,45, 48,49, 53,54
X	MARX ET AL: "Response of central metabolism in Corynebacterium glutamicum to the use of an NADH-dependent glutamate dehydrogenase" METABOLIC ENGINEERING, ACADEMIC PRESS., US, vol. 1, 1999, pages 35-48, XP002154493 ISSN: 1096-7176 the whole document ----- -/-	1-3, 9-14,16, 17,23, 29,30, 32,33, 38-41, 48,49, 53,54



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the International filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

27 May 2005

Date of mailing of the international search report

11 JUL 2005

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Box No. I Nucleotide and/or amino acid sequence(s) (Continuation of item 1.b of the first sheet)

1. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, the international search was carried out on the basis of:

a. type of material

- a sequence listing
 table(s) related to the sequence listing

b. format of material

- in written format
 in computer readable form

c. time of filing/furnishing

- contained in the international application as filed
 filed together with the international application in computer readable form
 furnished subsequently to this Authority for the purpose of search

2. In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

3. Additional comments:

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	PARK S M ET AL: "METABOLIC AND PHYSIOLOGICAL STUDIES OF CORYNEBACTERIUM GLUTAMICUM MUTANTS" BIOTECHNOLOGY AND BIOENGINEERING, INTERSCIENCE PUBLISHERS, LONDON, GB, vol. 55, no. 6, 1997, pages 864-879, XP000999162 ISSN: 0006-3592 the whole document -----	1-3, 9-14, 16, 23, 29, 30, 32, 38-41, 48, 49, 53, 54
X	WO 01/00844 A (BASF AG) 4 January 2001 (2001-01-04) abstract; claim 36; table 1 page 61 SEQ ID NO:135,136 page 7, line 13 - line 29 -----	22-28, 38-41, 46-54
X	PATENT ABSTRACTS OF JAPAN vol. 1999, no. 13, 30 November 1999 (1999-11-30) -& JP 11 206385 A (MITSUBISHI CHEMICAL CORP), 3 August 1999 (1999-08-03) abstract -----	22-28, 38-41, 48-54
X	US 2002/055152 A1 (BATHE BRIGITTE ET AL) 9 May 2002 (2002-05-09) the whole document -----	22-25, 28-41, 46-50, 53, 54
X	HOLS P ET AL: "Conversion of <i>Lactococcus lactis</i> from homolactic to homoalanine fermentation through metabolic engineering" NATURE BIOTECHNOLOGY, NATURE PUBLISHING, US, vol. 17, no. 6, June 1999 (1999-06), pages 588-592, XP002225554 ISSN: 1087-0156 abstract -----	22-28, 39, 49-52
X	GOKARN R R ET AL: "The physiological effects and metabolic alterations caused by the expression of <i>Rhizobium etli</i> pyruvate carboxylase in <i>Escherichia coli</i> ." APPLIED MICROBIOLOGY AND BIOTECHNOLOGY. JUL 2001, vol. 56, no. 1-2, July 2001 (2001-07), pages 188-195, XP002287974 ISSN: 0175-7598 abstract; figure 1 page 193, column 1, paragraph 1; table 3 -----	22-27, 49-52

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DOMINGUEZ H ET AL: "CARBON-FLUX DISTRIBUTION IN THE CENTRAL METABOLIC PATHWAYS OF CORYNEBACTERIUM GLUTAMICUM DURING GROWTH ON FRUCTOSE" EUROPEAN JOURNAL OF BIOCHEMISTRY, BERLIN, DE, vol. 254, no. 1, 15 May 1998 (1998-05-15), pages 96-102, XP000960354 ISSN: 0014-2956 cited in the application the whole document -----	1-54
A	BOTT MICHAEL ET AL: "The respiratory chain of Corynebacterium glutamicum." JOURNAL OF BIOTECHNOLOGY. 4 SEP 2003, vol. 104, no. 1-3, 4 September 2003 (2003-09-04), pages 129-153, XP002288114 ISSN: 0168-1656 page 137, column 1, paragraph 2 - page 138, column 1, paragraph 2 -----	46,47
A	KIEFER P ET AL: "Influence of glucose, fructose and sucrose as carbon sources on kinetics and stoichiometry of lysine production by Corynebacterium glutamicum." JOURNAL OF INDUSTRIAL MICROBIOLOGY & BIOTECHNOLOGY. JUN 2002, vol. 28, no. 6, June 2002 (2002-06), pages 338-343, XP002287975 ISSN: 1367-5435 abstract; figure 5 page 341, column 1, paragraph 1 -----	1-54
A	SAHM H ET AL: "PATHWAY ANALYSIS AND METABOLIC ENGINEERING IN CORYNEBACTERIUM GLUTAMICUM" BIOLOGICAL CHEMISTRY, XX, XX, vol. 381, no. 9/10, September 2000 (2000-09), pages 899-910, XP000979510 ISSN: 1431-6730 abstract; table 2 -----	1-54
A	PEQUIGNOT C ET AL: "Effect of oxygen transfer and carbon source composition on the growth of Corynebacterium melassecola" BIOPROCESS ENGINEERING 1995 GERMANY, vol. 13, no. 4, 1995, pages 197-204, XP008032761 ISSN: 0178-515X abstract ----- -/-	1-54

INTERNATIONAL SEARCH REPORT

PCT/IB2004/004426

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	MARX ACHIM ET AL: "Determination of the fluxes in the central metabolism of <i>Corynebacterium glutamicum</i> by nuclear magnetic resonance spectroscopy combined with metabolite balancing" BIOTECHNOLOGY AND BIOENGINEERING, vol. 49, no. 2, 1996, pages 111-129, XP002287973 ISSN: 0006-3592 abstract; figure 3 page 115, column 1, paragraph 1 - column 2 ----- WO 03/014330 A (KREUTZER CAROLINE ; DEGUSSA (DE); BATHE BRIGITTE (DE); MOECKEL BETTINA) 20 February 2003 (2003-02-20) abstract; example 1 -----	13
A	KIEFER PATRICK ET AL: "Comparative metabolic flux analysis of lysine-producing <i>Corynebacterium glutamicum</i> cultured on glucose or fructose." APPLIED AND ENVIRONMENTAL MICROBIOLOGY. JAN 2004, vol. 70, no. 1, January 2004 (2004-01), pages 229-239, XP002287976 ISSN: 0099-2240 the whole document -----	14,16,17
P,X		1-54

INTERNATIONAL SEARCH REPORT

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Patent document cited in search report	Publication date	Patent family member(s)		Publication date
WO 0107626	A 01-02-2001	AU 6362200 A BR 0012712 A CA 2377693 A1 CN 1372597 A EP 1208205 A2 JP 2003521888 T MX PA02000729 A NZ 517295 A WO 0107626 A2 US 2003017557 A1 US 6830903 B1 US 6465238 B1 ZA 200201268 A		13-02-2001 09-04-2002 01-02-2001 02-10-2002 29-05-2002 22-07-2003 20-08-2002 30-04-2004 01-02-2001 23-01-2003 14-12-2004 15-10-2002 03-03-2003

WO 0100844	A 04-01-2001	AU 5559000 A CA 2383875 A1 CN 1370235 A CZ 20014659 A3 EP 1263963 A2 ES 2178979 T1 WO 0100844 A2 JP 2003517291 T MX PA01012842 A PL 353388 A1 SK 18872001 A3 TR 200103706 T2 TR 200500004 T2 US 2004180408 A1 BR 0011805 A CA 2383865 A1 EP 1257649 A2 ES 2177475 T1 WO 0100843 A2 JP 2004534501 T MX PA01013123 A PL 353541 A1 SK 18862001 A3 TR 200103707 T2 AU 5836900 A BR 0011811 A CA 2380870 A1 CN 1451047 A EP 1290178 A2 HU 0203340 A2 WO 0100804 A2 JP 2003525593 T MX PA01012844 A PL 359863 A1 SK 18882001 A3 TR 200103709 T2 TR 200403466 T2 US 6822084 B1 AU 5421300 A BR 0011806 A CN 1371417 A US 2003162267 A1 US 2003049804 A1 AU 5421600 A	31-01-2001 04-01-2001 18-09-2002 11-09-2002 11-12-2002 16-01-2003 04-01-2001 27-05-2003 09-07-2002 17-11-2003 03-12-2002 21-10-2002 21-03-2005 16-09-2004 14-05-2002 04-01-2001 20-11-2002 16-12-2002 04-01-2001 18-11-2004 21-06-2002 01-12-2003 06-11-2002 23-09-2002 31-01-2001 18-06-2002 04-01-2001 22-10-2003 12-03-2003 28-01-2003 04-01-2001 02-09-2003 09-07-2002 06-09-2004 10-09-2002 21-08-2002 21-02-2005 23-11-2004 31-01-2001 14-05-2002 25-09-2002 28-08-2003 13-03-2003 31-01-2001	

INTERNATIONAL SEARCH REPORT

PCT/IB2004/004426

Patent document cited in search report	Publication date		Patent family member(s)	Publication date
WO 0100844	A		BR 0011810 A CA 2380863 A1 CN 1370236 A CZ 20014660 A3 EP 1255839 A2 ES 2177476 T1	07-05-2002 04-01-2001 18-09-2002 11-09-2002 13-11-2002 16-12-2002
JP 11206385	A	03-08-1999	NONE	
US 2002055152	A1	09-05-2002	DE 10044681 A1 EP 1186657 A1	21-03-2002 13-03-2002
WO 03014330	A	20-02-2003	BR 0211745 A CA 2456416 A1 CN 1541274 A WO 03014330 A2 EP 1414986 A2 US 2004043458 A1	13-10-2004 20-02-2003 27-10-2004 20-02-2003 06-05-2004 04-03-2004